

Appl. No. 10/055,301

Amdt. Dated August 15, 2005

Reply to Office Action of May 13, 2005

This listing of claims will replace all prior versions and listings of claims in this application.

IN THE CLAIMS:

1. (currently amended) An article having on at least a portion of its surface, a coating of a thin transition layer consisting of a metal bearing material and having a composition that varies from an exterior first composition ~~comprising~~ consisting of a metal as deposited to a second composition beneath the exterior first composition, which transition layer is superimposed on a metal bearing color layer and is substantially transparent and colorless to visible light.

2. (canceled)

3. (previously presented) The article of claim 1 in which one or more intermediate layers are interposed between the transition layer and the metal bearing color layer, said intermediate layer(s) being colorless, transparent, and less than 400 Å in thickness.

4. (original) The article of claim 1 in which the first composition is a non-precious refractory metal chosen from the group consisting of Ti, Zr or Hf, or an alloy thereof.

5. (currently amended) ~~The article of claim 1~~ An article having on at least a portion of its surface, a coating of a thin transition layer consisting of a metal bearing material and having a composition that varies from an exterior first composition comprising a metal to a second composition beneath the exterior first composition, which transition layer is superimposed on a metal bearing color layer and is substantially transparent and colorless to visible light, in which the first composition is a noble metal chosen from the group consisting of gold, silver, platinum, platinum group metals, or an alloy thereof.

6. (currently amended) ~~The article of claim 1~~ An article having on at least a portion of its surface, a coating of a thin transition layer consisting of a metal bearing material and having a composition that varies from an exterior first composition comprising a metal to a second composition beneath the exterior first composition, which transition layer is superimposed on a metal bearing color layer and is substantially transparent and colorless to visible light, in which the first composition is a corrosion resistant metal chosen from the group consisting of chromium or stainless steel, or an alloy thereof.

Appl. No. 10/055,301
Amdt. Dated August 15, 2005
Reply to Office Action of May 13, 2005

7. (previously presented) The article of claim 1 in which the metal bearing color layer has the same composition as the second composition in the transition layer.

8. (previously presented) The article of claim 1 in which the composition of the metal bearing color layer is chosen from one or more of Zr, Ti, Hf, C and N.

9. (previously presented) The article of claim 1 in which the first composition is zirconium metal and the second composition is chosen from one or more of Zr, Ti, Hf, C and N.

10. (original) The article of claim 1 in which the transition layer is deposited by a PVD process.

11. (previously presented) The article of claim 1 in which the metal bearing color layer is deposited by a PVD process.

12. (original) The article of claim 1 in which the transition between the first composition and the second composition of the transition layer is smooth.

13. (original) The article of claim 1 in which the transition between the first composition and the second composition of the transition layer is in discrete steps.

14. (previously presented) The article of claim 1 in which the first composition of the transition layer provides corrosion resistance.

15. (previously presented) An article of manufacture having on at least a portion of its surface a thin transition layer consisting of a metal bearing material having a composition that varies from a first exterior composition to a second composition beneath the exterior composition and in which the first composition provides corrosion protection, and the second composition determines the visible color of that portion of the article surface to which the transition layer is applied.

16. (original) The article of claim 15 in which the transition layer is superimposed on a metal bearing color layer and the second composition of the transition layer is essentially transparent.

17. (canceled)

18. (previously presented) The article of claim 1 wherein the transition layer has a thickness of about 150 Å or less.

Appl. No. 10/055,301

Amdt. Dated August 15, 2005

Reply to Office Action of May 13, 2005

19. (currently amended) An article comprising a substrate, a metal-bearing color layer superposed over a surface of the substrate, and a thin transition layer on the metal-bearing color layer, both the metal-bearing color layer and the thin transition layer being deposited by a PVD process in which a target is ~~bombarded~~ placed in a chamber to which are supplied one or more gases containing at least one additional element selected from carbon, nitrogen and oxygen, comprising

~~the supply of gases containing the additional element being gradually terminated during growth of the transition layer so that the transition layer defines~~

- a ~~first~~ second composition at the interface of the transition layer and the metal-bearing layer in which the concentration of the additional element is essentially the same as the concentration of the additional element in the metal-bearing color layer,
- a ~~second~~ first composition at the outer surface of the transition layer in which the concentration of the additional element is essentially zero, and
- a gradually decreasing concentration of the additional element from the interface to the outer surface of the transition layer,

the thickness of the transition layer being small enough so that the transition layer is optically transparent.

20. (previously presented) The article of claim 19, wherein the transition layer is about 20-200Å thick and corrosion resistant as determined by ASTM B117.

21. (previously presented) The article of claim 20, wherein the transition layer includes at least one metal or metal alloy selected from Ti, Zr, Hf, Au, Ag, Pt, other Pt group metals, Cr and stainless steel.

22. (previously presented) The article of claim 21, wherein the transition layer when formed by the PVD process and before contact with the atmosphere contains only C, N and the metal or metal alloy.

23. (previously presented) The article of claim 22, wherein the transition layer after contact with the atmosphere also contains oxygen.

Appl. No. 10/055,301

Amdt. Dated August 15, 2005

Reply to Office Action of May 13, 2005

24. (previously presented) The article of claim 22, wherein the metal or metal alloy is Zr.

25. (previously presented) The article of claim 19 in which one or more intermediate layers are interposed between the transition layer and the metal bearing color layer, said intermediate layer(s) being colorless, transparent, and less than 400 Å in thickness.

26. (previously presented) The article of claim 19, in which the transition layer is formed directly on the metal bearing color layer.

27. (previously presented) The article of claim 19, further comprising one or more of a corrosion protection layer and an adhesive layer intermediate the substrate and the metal bearing color layer.

28. (currently amended) The article of claim 19, comprising a substrate, a metal-bearing color layer superposed over a surface of the substrate, and a thin transition layer on the metal-bearing color layer, both the metal-bearing color layer and the thin transition layer being deposited by a PVD process in which a Zr target is ~~bombarded~~ placed in a chamber to which are supplied one or more gases containing at least one of N and C, comprising

~~the supply of gases containing N and C being gradually terminated during growth of the transparent layer so that the transition layer prior to contact with the atmosphere defines~~

- a ~~first~~ second composition at the interface of the transition layer and the metal-bearing layer in which the concentration of N and C are essentially the same as the concentration of N and C in the metal-bearing color layer,
- a ~~second~~ first composition at the outer surface of the transition layer composed essentially completely of Zr, and
- a gradually decreasing concentration of N and C from the interface to the outer surface of the transition layer,

the thickness of the transition layer being small enough so that the transition layer is optically transparent.

29. (previously presented) The article of claim 1, wherein the first composition consists of a metal.

Appl. No. 10/055,301
Amdt. Dated August 15, 2005
Reply to Office Action of May 13, 2005

30. (new) The article of claim 1, wherein the transition layer is adjacent to the metal bearing color layer.